

PATENT SPECIFICATION

(11)

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DRAWINGS ATTACHED

- (21) Application No. 33434/69 (22) Filed 2 July 1969
 (23) Complete Specification filed 2 July 1970
 (44) Complete Specification published 27 June 1973
 (51) International Classification G07D 5/00
 G07F 3/02

(52) Index at acceptance
 G4V P2A3A P2A3B P2A4 P2A5

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(54) IMPROVEMENTS IN OR RELATING TO COIN SELECTORS

(71) We, BRISTOL VENDING MACHINES LIMITED, a British Company, of New Station Road, Fishponds, Bristol, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 This invention relates to coin selectors which check and reject unsuitable coins.

The object of the invention is to provide a coin selector mechanism which simultaneously checks coin diameter and thickness and which as a result rejects those which are undersize.

According to the invention there is provided a coin selector mechanism having a coin track adapted to support an acceptable coin with its plane inclined from the vertical towards a reject path, the track comprising an upper guide for the top of the coin on the reject side and a generally V-section lower guide for supporting the bottom of the coin, the opposite surfaces of the V each being inclined to the normal plane of the coin (that is the plane of the coin when supported by both the upper and lower guides) so that coins too small in thickness roll in the lower guide at a lower level than acceptable coins, a space between the upper and lower guides being adapted to receive undersized coins (that is, too small in diameter and/or thickness) which fail to engage and be supported by the upper guide and consequently fall sideways from the track towards the reject path, the angle between the surface of the lower guide on the reject side and the normal plane of the coin being much less than the angle between the opposite surface of the lower guide and the normal plane of the coin.

The mechanism is desirably used with a coin slot which will not accept coins which are over-large in terms of either diameter or

thickness, so that the slot in conjunction with the features of the invention provides a complete check on coin size. Magnetic check means may also be employed to separate and reject counterfeit coins of magnetic material, (or to separate and accept, when so required, magnetic discs or magnetic coins of some currencies) these means desirably being positioned after the track portion. The magnetic means may be associated with underweight check means which operate to reject coins which are underweight, for example aluminium alloy discs, or alternatively to accept light coins and reject those which are overweight. This check may be provided by a counterbalanced and pivotally mounted platform on to which the coins travel, and which deflects to direct the coins into an "accept" path if they are not underweight.

A coin selector mechanism forming an illustrative embodiment of the invention will now be described by way of example, and with reference to the accompanying drawings in which:—

Figure 1 is a diagrammatic view of the selector showing the coin paths for acceptance and rejection.

Figure 2 shows a detail in section of the portion of the coin track which rejects undersize coins.

Figure 3 shows a detail comprising a counter-balanced weight-checking platform.

Figure 4 shows alternative structure for accepting magnetic coins and discs, and

Figures 5 and 6 show, in views at right angles to each other, alternative structures for accepting light-weight coins and rejecting heavier coins and magnetic coins.

Referring to the drawings, and particularly to Figure 1, the selector has a body provided by a sandwich assembly of three rectangular main components—a back body member 1 represented by chain lines in Figure 1 and a central body member 2, these two members being formed as die-castings.

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and an aluminium cover plate 3, shown detached,—to which various coin-guiding and checking elements are attached. This construction facilitates assembly, as final assembly consists of fitting together three sub-assemblies each comprising one body member and the corresponding internal elements.

The central body member 2 is box-shaped with a main wall 4, side walls 5 open at the bottom and cast with a wall 6 which is inclined both vertically and horizontally for the sliding of coins along it. The body member 2 has a flat plate portion 7, upstanding from the inclined wall 6 in the plane of its front face which receives cover plate 3.

The selector of Figure 1 is designed to be positioned below a coin slot of appropriate dimensions to act as a "no-go" gauge, i.e. coins of too great a diameter or thickness cannot be inserted. Inserted coins fall through a chute on to the upper inclined face 6 of the body portion 2 and roll to a reject aperture 8 formed in the inclined wall 6.

The lower guide of the inclined track on which they roll is defined by the chamfered upper edge 9 of a die-cast guide element 10 fixed to the central body member, and a guide element 11 which has an oppositely chamfered upper edge 12 and projects through the reject aperture 8 in the central body member. Thus the lower guide of the track portion is defined by two relatively inclined surfaces, and is thus of generally V-section. The surface 12 on the side adjacent the cover plate presents an angle of about 35° to the vertical and that of the other face 9 is inclined at about 25° to the vertical, and the coin travels along the lower guide-track in contact with the inclined surface 6 on the central body member 2 so that it is inclined sideways at an angle of about 20°. A gauge rail 13 fitted to the central body member at the top edge of the reject aperture provides an overlap guide along which the rim of an acceptable coin is supported at the top on the reject side while rolling along the lower guide-track, and this gauge rail prevents the coin falling sideways through the aperture. However, if the coin is undersize in diameter, its rim does not engage the gauge rail and hence the coin falls sideways through the aperture into the reject path between the main body member and the cover plate. It is similarly rejected even if of normal diameter if it is undersize in thickness, as the coin then sits down further in the lower guide track between the relatively inclined surfaces and is again not supported by the gauge rail. The relatively small inclination with respect to the plane of the normal coin of the side surface of the lower guide track on the reject path side ensures that as an unacceptable coin falls sideways it tends to pivot more about its point of engagement with the opposite side surface of the lower guide track

than its point of engagement with the reject side surface, with the result that the coin has less tendency to rise and foul the gauge rail as it falls sideways beneath the latter.

When it reaches the bottom end of the guide track, an accepted coin falls vertically downwards past the die-cast guide element 10 on to an oppositely inclined guide block element 14 which is fixed to the central body member and guides the coin back towards the other side of the assembly and on to a counterbalanced weightcheck platform 15 (shown in the detail of Figure 3) aligned with the guide block 14.

The weightcheck platform is pivotally mounted on the central body member 2 on the side thereof adjacent the cover plate, on which side it has an adjustable counterweight. The operative edge portion of the platform projects through a suitable inclined aperture in that central body member 2 and into the narrow space between the two die-cast body members 1 and 2, within which space the coin travels through the various checking means. This platform is deflected if the coin is of satisfactory weight, and on such deflection the coin falls freely along a final accept path; a coin which is too light, for example a counterfeit in the form of an aluminium disc, rolls along the platform and off the lower end of the latter to fall along a reject path. While dropping between the size-check means and the weightcheck means the coin is subject to the magnetic field of a bar magnet 16 embedded in the die-cast guide element 10 close to the bottom edge of the latter. This attracts unwanted coins with a ferrous content, and such coins do not fall down on to the guide block but are attracted to and run along the inclined under-surface of the die-cast guide element 10, which surface is initially disposed parallel to the magnet. However, towards the end of the magnet it is inclined more sharply downwards to provide a step, and as the coin runs along this step it moves progressively further away from the magnet until the magnetic attraction is overcome and it drops down along the same reject path as that followed by underweight coins which do not deflect the platform.

As described the selector rejects coins having a ferrous content, whereas with some currencies genuine coins have a ferrous content and it is required to reject non-ferrous counterfeits. In this case as shown in Figure 4 the bar magnet above the weight platform is omitted and a generally similar arrangement, comprising a guide block 17 and a magnet 18, is positioned below the platform so that coins which are acceptable in weight drop down towards a peg 19 which, if of non-ferrous content, they strike and are thereby deflected to one side towards the reject path followed by underweight coins.

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never, if they have the desired ferrous content they are attracted by the magnetic check means and fall to the other side of the peg along the final accept path.

- 5 To suit some currencies it may be desired to accept lightweight coins, for example of aluminium, and to reject all heavier coins having a ferrous or nickel content for example. To this end it may be arranged, as a further alternative, that the desired lightweight coins fall off the end of the weight platform 15 as shown in Figures 5 and 6 on to an inclined guide element 20 which directs the coins back across the assembly into the final accept path, whereas undesired coins which are of sufficient weight to deflect the platform fall down on to a guide element 21 inclined the other way and are hence directed into the reject path.

20 WHAT WE CLAIM IS:—

1. A coin selector mechanism having a coin track adapted to support an acceptable coin with its plane inclined from the vertical towards a reject path; the track comprising an upper guide for the top of the coin on the reject side and a generally V-section lower guide for supporting the bottom of the coin, the opposite surfaces of the V each being inclined to the normal plane of the coin (that is the plane of the coin when supported by both the upper and lower guides) so that coins too small in thickness roll in the lower guide at a lower level than acceptable coins, a space between the upper and lower guides being adapted to receive undersized coins (that is, too small in diameter and/or thickness) which fail to engage and be supported by the upper guide and consequently fall sideways from the track towards the reject path, the angle between the surface of the lower guide on the reject side

and the normal plane of the coin being much less than the angle between the opposite surface of the lower guide and the normal plane of the coin.

2. Coin selector according to claim 1, wherein the inclined surfaces of the lower guide are provided by two parallel plates with opposed chamfered edges.

3. Coin selector according to claim 1 or claim 2, in association with a coin slot which will not accept coins which are over-large in diameter or thickness.

4. Coin selector according to any preceding claim including magnetic checking means to separate coins of magnetic material.

5. Coin selector according to claim 4, wherein the magnetic checking means comprises a magnet in a guide member close to a lower edge thereof so that magnetic discs roll along that edge.

6. Coin selector according to any preceding claim including underweight checking means.

7. Coin selector according to claim 6, said underweight checking means comprising a counter-balanced and pivotally mounted platform on to which the coins travel and which deflects to direct coins into separate paths according to their weight.

8. Coin selector according to any preceding claim, comprising a sandwich assembly of three main components to which coin guiding and checking elements are attached.

9. Coin selector substantially as hereinbefore described with reference to the accompanying drawings.

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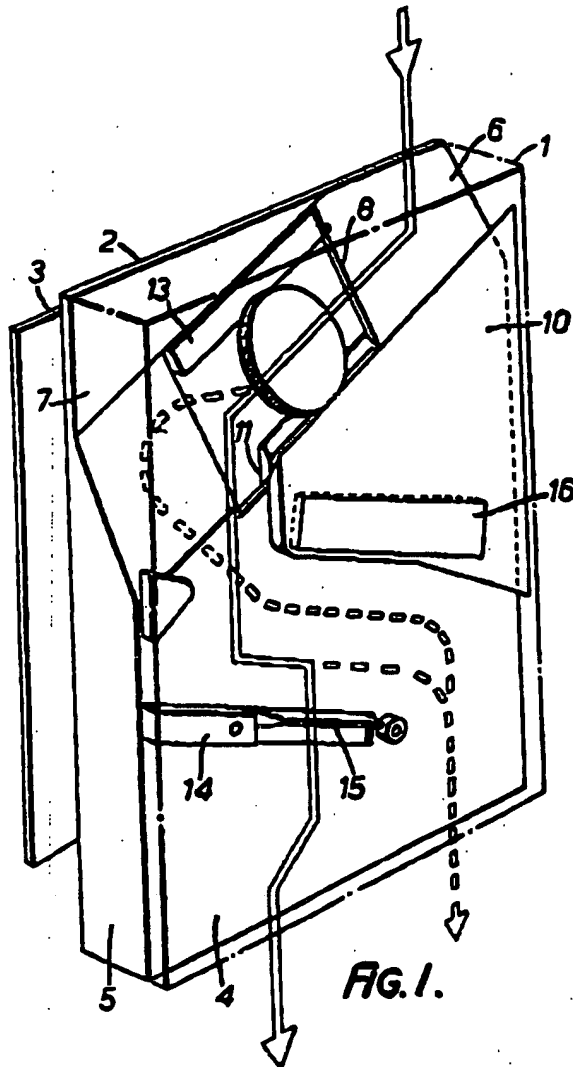
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FIG. 1.

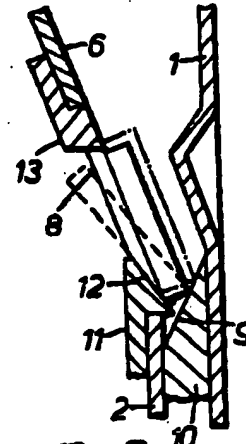


FIG. 2.

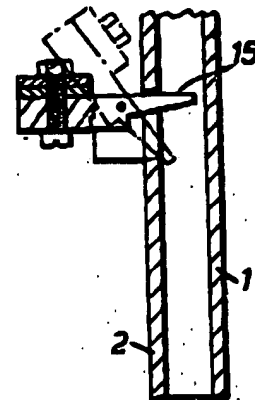


FIG. 3.

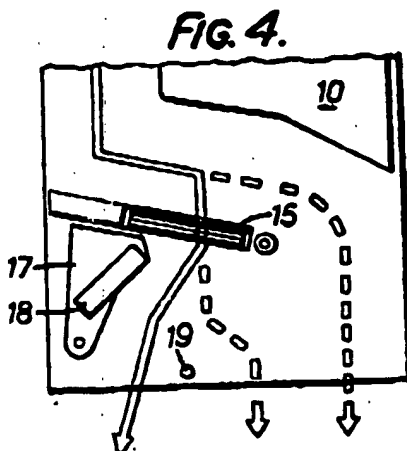


FIG. 4.

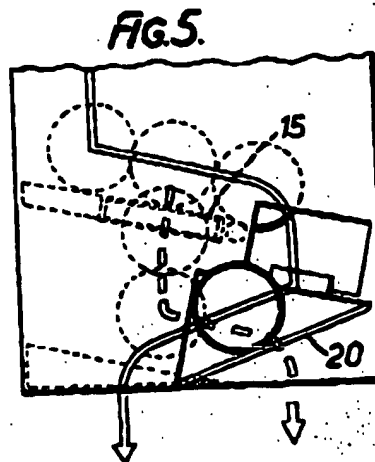


FIG. 5.



FIG. 6.

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